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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,896	04/06/2006	Shuji Ikegami	4633-0166PUS1	3390

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EXAMINER

COX, ALEXIS K

ART UNIT	PAPER NUMBER
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3744

NOTIFICATION DATE	DELIVERY MODE
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11/10/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/574,896	Applicant(s) IKEGAMI ET AL.	
	Examiner ALEXIS K. COX	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,8-10 and 13-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,8-10 and 13-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Yonezawa et al (US Patent No. 5,005,371).

Regarding claim 1, Yonezawa et al explicitly discloses an air conditioning apparatus comprising a cold and hot water circuit for the flow of cold and hot water (26, 27, associated loops; see column 7 lines 46-47 and 50-51), the cold and hot water circuit including four heat exchangers for effecting heat exchange between the cold and hot water and an airstream, wherein two of the four heat exchangers are made up of air heat exchangers (22, 23, see column 7 lines 15-16) which mainly perform air sensible heat processing and the other two heat exchangers (A, a, b, see column 8 lines 10-17), which mainly perform air latent heat processing with an adsorbent supported on the surface thereof (see figure 1; see also column 5 lines 11-20). Yonezawa et al further discloses a first switching mechanism (V2, V4, see figure 6) for switching a direction of cold and hot water flow so that hot water flows through one of the adsorption heat exchangers while cold water flows through the other adsorption heat exchanger, and a second switching mechanism (V1, V3) for switching the direction of cold and hot water

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flow so that hot water flows through one of the air heat exchangers while cold water flows through the other air heat exchanger.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 8-10, and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonezawa et al (US Patent No. 5,005,371) in view of Halene (US Patent No. 4,995,235).

Alternately regarding claim 1, it is noted that although the switching mechanisms of Yonezawa et al permit simultaneous first-direction operation of the hot and cold water loops, they neither permit the air and adsorption heat exchangers to be switched independently of each other nor do they permit simultaneous operation of the hot and cold water loops when being applied to the reverse heat exchangers. The examiner respectfully suggests that these features are not explicitly claimed, and, further, that if they were, they would be readily apparent as present from the rejection below concerning claims 15 and 16.

Regarding claim 8, it is noted that Yonezawa et al does not explicitly disclose the presence of a control unit which switching the flow of the hot and cold water in the hot and cold water circuit and the distribution of air to thereby perform moisture absorbing and moisture releasing operations which dehumidify and humidify the air. Halene explicitly discloses the presence of a control for the operation of the valves in use in the heating and cooling circuits (see column 8 lines 14-16). As the systems of Yonezawa et al and Halene et al are similar in structure and function, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the controller of Halene to control the valve operations of Yonezawa et al to appropriately control the hot and cold water circuit for dehumidification and rehumidification operations.

Regarding claims 15 and 16, it is noted that the switching mechanisms of Yonezawa et al do not comprise four three way valves each. Indeed, it may be argued that the four three-way valves of Yonezawa et al collectively comprise a single switching mechanism. The four three-way valves of Halene (7, 16, 17, 8, see figure 1) comprise a single switching mechanism equivalent to the one disclosed by the applicant in figure 21, comprised of valves A1, A2, B1, and B2. The three-way valves of Halene permit reversal of hot and cold water through heat exchangers 5 and 12 without requiring reversal through heat exchangers 19 and 23. Additionally, the heat exchangers 5 and 12 of Halene are hydrogen reservoirs, which may be considered equivalent to sorbent heat exchangers in that they hold more when cold than when hot, and this is why they are temperature-controlled. It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to use the switching mechanism of Halene for each pair of heat exchangers in the system of Yonezawa et al, in order to permit switching hot and cold flows such that the overall sorbent heat exchangers may be reversed and continue to operate the system while recharging, rather than requiring a shutdown of water flow to one set of sorbent and air heat exchangers while the other is recharged.

7. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonezawa et al (US Patent No. 5,005,371) in view of Kirby (US Patent No. 4,703,886).

Regarding claims 8-10, it is noted that Yonezawa et al does not explicitly disclose a control unit which switches the flow of hot and cold water in the hot and cold water circuit and the distribution of air to thereby perform moisture absorbing and releasing operations, such that the time interval at which switching between operations can be set

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to decrease as the latent heat load increases. Kirby explicitly discloses a programmable humidistat (see column 1 lines 59-61) using the same processor as and possibly in combination with a programmable thermostat (see column 2 lines 39-43 and column 1 lines 53-55). As the processor used by Kirby performs control according to timed predictions of temperature (see column 1 lines 22-25), it is capable of performing the control of the system of Yonezawa et al by setting a time interval at which switching between the moisture absorbing operation and moisture releasing operation is accomplished, and further of decreasing the time interval at which switching between the moisture absorbing operation and the moisture releasing operation are accomplished as the latent heat load increases, as the saturation point of the adsorbent material will be reached faster when there is more humidity being pulled out of the air. Additionally, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the controller of Kirby in the system of Yonezawa et al, as Yonezawa et al fails to specify a specific controller and the controller of Kirby is designed for used in a system such as that of Yonezawa et al, and the use of the controller of Kirby would reduce the cost of manufacturing the system of Yonezawa et al by not requiring the design of a new controller.

8. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonezawa et al (US Patent No. 5,005,371) in view of Rhodes (US Patent No. 4,786,301).

Regarding claims 13 and 14, Rhodes explicitly discloses that multiple arrangements of adsorbent and traditional heat exchangers, including series and

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parallel, are equivalent and obvious variants on the system (see column 13 lines 20-27).

The parallel arrangement of Rhodes would result in the airstream applied to the latent heat exchangers not passing through the sensible heat exchangers, and the airstream applied to the sensible heat exchangers not passing through the latent heat exchangers. As the systems of Rhodes and Yonezawa et al are similar in structure and function, it would have been obvious to one of ordinary skill in the art to apply the variant patterns of Rhodes patent to system of Yonezawa et al in order to better fit the system into available space.

Response to Arguments

9. Applicant's arguments with respect to claims 1, 8-10, and 13-16 have been considered but are moot in view of the new ground(s) of rejection.

Regarding all claims rejected, all arguments applied concern the absence of newly claimed elements from the base reference, and failure to remedy them with secondary references; as a new base reference has been applied, these are moot.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Griffin (US Patent No. 7,603,791) discloses hot and cold brine loops switched via 3-way valve. Iwamoto et al (US Patent No. 6,520,249) discloses a system with equivalent 3-way valve switching on warm and cold hydrogen flow paths. Sanada et al (US Patent No. 6,041,617) discloses hot and cold fluid loops running to sorbent exchangers in a switch able manner. Coellner et al (US Patent No. 5,749,230) discloses explicitly separate air paths for latent and sensible conditioning. And Mabuchi

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et al (US Patent No. 5,806,337) discloses an absorption refrigeration machine with four heat exchangers and two fluid loops.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXIS K. COX whose telephone number is (571)270-5530. The examiner can normally be reached on Monday through Thursday 8:00a.m. to 5:30p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Jules can be reached on 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AKC/

/Frantz F. Jules/
Supervisory Patent Examiner, Art Unit 3744